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# Effects of EDP on the auditor's study and evaluation of internal control; Statement on auditing standards, 003

American Institute of Certified Public Accountants. Auditing Standards Executive Committee

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## The Effects of EDP on the Auditor's Study And Evaluation of Internal Control

### Introduction

1. Section 320, "The Auditor's Study and Evaluation of Internal Control," of Statement on Auditing Standards No. 1<sup>1</sup> defines internal control in terms of administrative control and accounting control. That section also sets forth the basic concepts of accounting control and concludes that accounting control is within the scope of the study and evaluation of internal control contemplated by generally accepted auditing standards, while administrative control is not.

2. Section 320.33 of SAS No. 1 discusses methods of data processing as follows:

Since the definition and related basic concepts of accounting control are expressed in terms of objectives, they are independent of the method of data processing used; consequently, they apply equally to manual, mechanical, and electronic data processing systems. However, the organization and procedures required to accomplish those objectives may be influenced by the method of data processing used.

Because the method of data processing used may influence the organization and procedures employed by an entity to accomplish the objectives of accounting control, it may also influence the procedures

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<sup>1</sup> Referred to hereinafter as SAS No. 1.

employed by an auditor in his study and evaluation of accounting control to determine the nature, timing, and extent of audit procedures to be applied in his examination of financial statements.

3. A data processing system may be wholly manual or may include a combination of manual activities, mechanical activities, and electronic data processing (EDP) activities. EDP applications vary considerably, from routine applications that process a small payroll to complex, integrated applications that process accounting, production, marketing, and administrative information simultaneously. In some data processing systems, accounting control procedures are performed by people in one or more departments. In EDP systems, many or even most of these control procedures may be performed by the EDP process itself. When EDP is used in significant accounting applications,<sup>2</sup> the auditor should consider the EDP activity in his study and evaluation of accounting control. This is true whether the use of EDP in accounting applications is limited or extensive and whether the EDP facilities are operated under the direction of the auditor's client or a third party.

4. The first general auditing standard is as follows: "The examination is to be performed by a person or persons having adequate technical training and proficiency as an auditor."<sup>3</sup> If a client uses EDP in its accounting system, whether the application is simple or complex, the auditor needs to understand the entire system sufficiently to enable him to identify and evaluate its essential accounting control features. Situations involving the more complex EDP applications ordinarily will require that the auditor apply specialized expertise in EDP in the performance of the necessary audit procedures.

5. This Statement describes the effects of the use of EDP on the various characteristics of accounting control and on an auditor's study and evaluation thereof. It is intended to be read in conjunction with section 320 of SAS No. 1. The concepts in this Statement are expressed in general terms. An auditor likely will need to refer to other sources of information to apply the concepts in particular audit situations.<sup>4</sup>

<sup>2</sup>Significant accounting applications are those that relate to accounting information that can materially affect the financial statements the auditor is examining.

<sup>3</sup>SAS No. 1, section 150.02.

<sup>4</sup>This Statement is intended to provide a framework for the development of further guidance concerning auditing procedures in examining financial statements of entities that use EDP in accounting applications.

Those sources include continuing education courses, data processing manuals, current textbooks, and current professional literature.

## **EDP Accounting Control Procedures**

6. Some EDP accounting control procedures relate to all EDP activities (general controls) and some relate to a specific accounting task, such as preparation of account listings or payrolls (application controls).

7. General controls comprise (a) the plan of organization and operation of the EDP activity, (b) the procedures for documenting, reviewing, testing and approving systems or programs and changes thereto, (c) controls built into the equipment by the manufacturer (commonly referred to as "hardware controls"), (d) controls over access to equipment and data files, and (e) other data and procedural controls affecting overall EDP operations. Weaknesses in general controls often have pervasive effects. When general controls are weak or absent, the auditor should consider the effect of such weakness or absence in the evaluation of application controls.

8. Application controls relate to specific tasks performed by EDP. Their function is to provide reasonable assurance that the recording, processing, and reporting of data are properly performed. There is considerable choice in the particular procedures and records used to effect application controls. Application controls often are categorized as "input controls," "processing controls," and "output controls."

- a. Input controls are designed to provide reasonable assurance that data received for processing by EDP have been properly authorized, converted into machine sensible form and identified, and that data (including data transmitted over communication lines) have not been lost, suppressed, added, duplicated, or otherwise improperly changed. Input controls include controls that relate to rejection, correction, and resubmission of data that were initially incorrect.
- b. Processing controls are designed to provide reasonable assurance that electronic data processing has been performed as intended for the particular application; i.e., that all transactions are processed

as authorized, that no unauthorized transactions are omitted, and that no unauthorized transactions are added.

- c. Output controls are designed to assure the accuracy of the processing result (such as account listings or displays, reports, magnetic files, invoices, or disbursement checks) and to assure that only authorized personnel receive the output.

9. EDP accounting control procedures may be performed within an EDP organization, a user department, or a separate control group. The department or unit in which accounting control procedures are performed is less significant than the performance of the procedures by persons having no incompatible functions for accounting control purposes and the effectiveness of the procedures.

## **The Effects of EDP on the Characteristics of Accounting Control**

10. The objectives and the essential characteristics of accounting control do not change with the method of data processing. However, organization and control procedures used in electronic data processing may differ from those used in manual or mechanical data processing. For example, electronic data processing of sales, billings, and accounts receivable may perform the ancillary function of verifying invoice totals and extensions, a control that usually is established in manual data processing through independent clerical calculations. Further, in some EDP systems (such as one using direct terminal input as the basic source of data to be processed in a payroll, cost accounting, or inventory control application) control functions that otherwise would be performed by several individuals and departments may be concentrated within the EDP activity. Paragraphs 11 through 23 describe the effects of EDP on the essential characteristics of accounting control.<sup>5</sup>

### **Segregation of Functions**

11. As set forth in section 320.36 of SAS No. 1, incompatible functions for accounting control purposes are those that place any person

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<sup>5</sup> Those characteristics are described in SAS No. 1, section 320.35-.48.

in a position both to perpetrate and to conceal errors or irregularities in the normal course of his duties. Many EDP systems not only process accounting data but also include procedures for detecting errors and irregularities and for providing specific authorization for certain kinds of transactions. Since the procedures may be combined, incompatible functions may be more likely to be combined in an EDP activity than in a manual activity.

12. Frequently, functions that would be considered incompatible if performed by a single individual in a manual activity are performed through the use of an EDP program or series of programs. A person having the opportunity to make unapproved changes to any such programs performs incompatible functions in relation to the EDP activity. For example, a program for an accounts-payable application may have been designed to process for payment a vendor's invoice only if accompanied by a purchase-order record agreeing with the invoice as to prices and quantities and a receiving record indicating receipt of the goods or services. In the absence of adequate control over program changes, an unapproved revision might change the application so that unsubstantiated payments could be made to vendors.

13. EDP data files frequently are basic records of an accounting system. They cannot be read or changed without the use of EDP, but they can be changed through the use of EDP without visible evidence that a change has occurred. A person in a position to make unapproved changes in EDP data files performs incompatible functions. In the example of the accounts-payable application in the preceding paragraph, an individual who could make unapproved changes in the files containing purchase orders and receiving reports might be able to add spurious records purporting to represent purchase orders and receiving reports to the files, thereby causing the program to process for payment unapproved vendor invoices.

14. Supervisory programs are used in some EDP systems to perform generalized functions for more than one application program. Supervisory programs include (a) "operating systems," which control EDP equipment that may process one or more application programs at a given time and (b) "data management systems," which perform standardized data handling functions for one or more application programs. An individual who can make unapproved changes in supervisory programs has opportunities to initiate unauthorized transac-

tions that are like those of a person who can make unapproved changes in application programs or data files; he therefore performs incompatible functions.

15. Paragraphs 11 through 14 discuss incompatible functions related to matters such as assignment of duties, changes in programs, maintenance of data files, and operating or data management systems. If individuals involved perform incompatible functions, compensating controls may be applied. For example, a plan of organization and operation may contain controls over access to EDP equipment, effective library controls and provisions for effective supervision and rotation of personnel. Also, user departments or other control groups may establish independent document counts or totals of significant data fields. Compensating controls frequently are supplemented by internal audit procedures.

### **Execution of Transactions**

16. The extent to which EDP is used to execute steps in a transaction cycle varies. For example, EDP may be used in an accounting application for reordering materials: (a) to determine items to be ordered and prepare the purchase orders, (b) to identify items that require replenishment and prepare a notification list for use by purchasing department personnel, or (c) to prepare inventory listings for review by purchasing department personnel.

17. To the extent that EDP is used to execute steps in a transaction cycle, the EDP application program usually includes accounting control procedures designed to assure that the steps are executed in conformity with specific or general authorizations issued by persons (including, in advanced systems, customers or other persons not employed by the entity) acting within the scope of their authority. Those procedures might include checks to recognize data that fall outside predetermined limits and tests for overall reasonableness.

### **Recording of Transactions**

18. Accounting control is concerned with recording of transactions at the amounts and in the accounting periods in which they were executed and with their classification in appropriate accounts. The use of EDP to process or initiate and record transactions may affect the source and extent of possible errors.

19. To be usable in EDP, data are converted into machine-sensible form. The initial recording of the transactions or the initiation of transactions by the processing of previously recorded data may introduce errors that could affect balances and reports unless data input is properly controlled. Procedures of various types are used to maintain accounting control over data conversion. Some are manual, some are an integral part of the EDP program, and some are built into the EDP equipment by the manufacturer.

20. The use of EDP often provides an opportunity to improve accounting control relating to the recording of transactions. For example, EDP equipment is not subject to errors caused by fatigue or carelessness. It processes and records like transactions in a like manner. It may be programmed to detect certain types of invalid or unusual transactions. The procedures for these purposes may be more comprehensive, effective, and efficient than manual control procedures having the same objectives. On the other hand, a transaction may be processed incorrectly by EDP if the EDP program does not provide for the particular set of relevant circumstances, whereas the same transaction might be questioned in a manual system.

21. The effectiveness of accounting control over the recording of transactions by EDP depends on both (a) the functioning of the EDP procedures that record the transactions and produce the output (such as account listings or displays, summaries, magnetic files, and exception reports) and (b) the follow-up or other actions of users of the output. For example, an EDP program might reject from further processing invoices with improperly coded customer numbers. However, if users who receive exception reports on those items do not correct the customer numbers and resubmit the invoices for processing, accounts receivable and sales will be understated.

### **Access to Assets**

22. EDP personnel have access to assets<sup>6</sup> if the EDP activity includes the preparation or processing of documents that lead to the use or disposition of the assets. EDP personnel have direct access to cash, for example, if the EDP activity includes the preparation and signing of disbursement checks. Sometimes access by EDP personnel to assets may not be readily apparent because the access is indirect.

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<sup>6</sup>See section 320.42 of SAS No. 1.



For example, EDP may generate payment orders authorizing issuance of checks, shipping orders authorizing release of inventory, or transfer orders authorizing release of customer-owned securities. Controls such as those discussed in paragraph 15 should be established to minimize the possibility of unauthorized access to assets by EDP personnel.

### **Comparison of Recorded Accountability With Assets**

23. EDP frequently is used to compare recorded accountability with assets. For example, EDP may summarize physical counts of inventories or securities and compare the recorded quantities with the summarized counts. If EDP is so used, conditions under which errors or irregularities may occur should be considered. For example, there may be opportunities to overstate physical counts, insert fictitious physical counts, or suppress the printout of differences. Many of the considerations described in paragraphs 18 through 21 may also apply.

## **Review of the System**

24. An auditor's review of a client's system of accounting control should encompass all significant and relevant manual, mechanical, and EDP activities and the interrelationship between EDP and user departments. The review should comprehend both the control procedures related to transactions from origination or source to recording in the accounting records and the control procedures related to recorded accountability for assets. The objectives of the auditor's review of accounting control within EDP are similar to those for manual and mechanical processing. The review is an information-gathering process that depends on knowledgeable inquiries directed to client personnel, observation of job assignments and operating procedures, and reference to available documentation related to accounting control.

25. The preliminary phase of an auditor's review should be designed to provide an understanding of the flow of transactions<sup>7</sup> through the accounting system, the extent to which EDP is used in each significant accounting application, and the basic structure of

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<sup>7</sup> For a description of the flow of transactions, see SAS No. 1, section 320.19-25.

accounting control. During the preliminary phase, the auditor may identify some of the specific accounting control procedures relating to each application and may become aware of apparent material weaknesses in the procedures. The auditor's preliminary understanding ordinarily is obtained by inquiry, but it also may be obtained by observing client personnel and reviewing documentation. Such preliminary understanding of EDP procedures normally relates to the general controls and application controls discussed in paragraphs 6 through 9.

26. After completing the preliminary phase of his review as described in paragraph 25, for each significant accounting application the auditor should be in a position to assess the significance of accounting control within EDP in relation to the entire system of accounting control and therefore to determine the extent of his review of EDP accounting control.

- a. The auditor may conclude that accounting control procedures within the EDP portions of the application or applications appear to provide a basis for reliance thereon and for restricting the extent of his substantive tests. In that event, unless the auditor chose to follow the procedures described in paragraph 26c, he would complete his review of the EDP accounting control procedures, perform related tests of compliance, and evaluate the control procedures to determine the extent of his reliance thereon and the extent to which substantive tests may be restricted.
- b. The auditor may conclude that there are weaknesses in accounting control procedures in the EDP portions of the application or applications sufficient to preclude his reliance on such procedures. In that event, he would discontinue his review of those EDP accounting control procedures and forgo performing compliance tests related to those procedures; *he would not be able to rely* on those EDP accounting control procedures. The auditor would assess the potential impact on the financial statements he is examining of such weaknesses as have come to his attention, and would accomplish his audit objectives by other means.
- c. The auditor may decide not to extend his preliminary review and not to perform tests of compliance related to accounting control procedures (either in general or as to certain procedures) within the EDP portions of the application or applications even though he concludes that the controls appear adequate. In that event,

*he would not be able to rely* on those EDP accounting control procedures. Situations of this type could be those in which —

- (1) The auditor concludes that the audit effort required to complete his review and test compliance would exceed the reduction in effort that could be achieved by reliance upon the EDP accounting controls.
- (2) The auditor concludes that certain EDP accounting control procedures are redundant because other accounting control procedures are in existence.

## Tests of Compliance

27. The purpose of tests of compliance is to provide reasonable assurance that accounting control procedures are being applied as prescribed. Tests of compliance are concerned primarily with the questions: (a) Were the necessary procedures performed? (b) How were they performed? (c) By whom were they performed?

28. Some accounting control procedures within the EDP activity leave visible evidence indicating that the procedures were performed. An example of such evidence is a file documenting (a) program changes for each EDP application and (b) approval of the changes. Other examples are EDP-generated error listings and exception reports.

29. Some accounting control procedures within the EDP activity, especially those in programs that are designed to detect erroneous or invalid data, leave no visible evidence indicating that the procedures were performed. Then, the auditor should test these controls by reviewing transactions submitted for processing<sup>8</sup> to determine that no transactions tested have unacceptable conditions or that unacceptable conditions present were reported and appropriately resolved. The review may be done manually if conditions permit, or the auditor may be able or find it necessary to use EDP to detect unacceptable conditions, either by using his own independent programs or by using copies of the client's programs that the auditor has independently determined to be adequate for his purposes. An alternative approach to testing compliance with accounting control procedures in computer programs is to review and test the programs and then to perform

<sup>8</sup>For a discussion of timing and extent of tests, see section 320.60-.63 of SAS No. 1.

tests to provide assurance that the tested programs actually were used for processing. However, the auditor should be aware that this approach can be used only when effective controls exist over access and changes to programs used for processing.

30. Some accounting control procedures within the EDP activity leave neither visible nor machine-readable evidence. For example, one of the major characteristics of accounting control is the proper segregation of functions. Evidence that such accounting control procedures are functioning is obtained by observing client personnel and making corroborative inquiries.

## Evaluation of the System

31. Evaluation of the EDP aspects of a system of accounting control is not different conceptually from the evaluation of other aspects of the system and should be an integral part of the auditor's evaluation of the system.<sup>9</sup> Accounting control procedures performed both within the EDP activity and by user departments influence the effectiveness of the system and should be considered together by the auditor. The effects of the auditor's evaluation on the extent of his other auditing procedures are described in SAS No. 1, section 320.69-.75.

*The Statement entitled "The Effects of EDP on the Auditor's Study and Evaluation of Internal Control" was adopted unanimously by the twenty-one members of the Committee.*

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<sup>9</sup> See SAS No. 1, section 320.64-.68, for a description of the auditor's approach to the evaluation of accounting control.

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